WHAT IS CLAIMED IS:

1. A cell cuture medium useful for determining levels of intracellular function of glutathione in lymphocytes and for performing biochemical analysis of said lymphocyte antioxidant function, said medium comprising:

a buffered, serum-free solution containing the following ingredients:

a carbohydrate selected from the group consisting of glucose and a compound biologically capable of producing glucose in said lymphocytes,

a biologically usable form of pantothenic acid, choline or a biological usable form of a substance capable of producing choline in said lymphocytes,

inorganic ions comprising chloride, phosphate, calcium, magnesium, potassium, sodium, and iron in a biologically utilizable form,

L- Buthionine-[S.R.]-Sulfoximine,

deionized water, and

a mitogen in an amount effective to stimulate the lymphocytes being assayed;

said buffered, serum-free solution having a pH from about 6.8 to 7.6,

said cell culture medium characterized by being effective to determine levels of intracellular function of glutathione in said

lymphocytes, and to analyze biochemically antioxidant function of said lymphocytes.

2. The cell cuture medium of claim 1, wherein said medium is supplemented with a nutrient supplement selected from the group consisting of biological utilizable forms of amino acids and vitamins, the nutrient being tested for being omitted from or being present in limiting or inhibitory amounts in the nutrient supplement.

3. The cell cuture medium of claim 1, wherein said vitamins are selected from the group consisting of biotin, folinic acid or a biologically usable form of folic acid, nicotinamide or nicotinic acid, riboflavin, thiamin, vitamin B_6, and vitamin B_{12}, and compounds capable of producing them in the cells; and wherein said amino acids or the compounds biologically capable of producing the amino acids comprise L-arginine, L-cysteine, L-glutamine, glycine, L-histidine, L-isoleucine, L-leucine, L-lysine, L-methionine, L-phenylalanine, L-serine, L-threonine, L-tryptophan, L-tyrosine, and L-valine, the amino acids being present as a group, each in an amount not exceeding inhibitory concentrations.

4. The cell cuture medium of claim 1, wherein said L-Buthionine-[S.R.]-Sulfoximine is present in a concentration of from about 5 μM to about 500 μM.

5. The cell culture medium of claim 1, wherein the cell culture medium is supplemented at concentrations eliciting approximately a maximal response with one or more stimulatory nutrients selected from the group consisting of pyruvate, adenine, and inositol or compounds capable of producing them within said lymphocytes.

6. A method of determining levels of intracellular function of glutathione and analyzing biochemically cellular antioxidant function in an individual comprising the steps of:

inoculating the cell culture medium of claim 1 with lymphocytes from said individual;

incubating the inoculated cell culture medium; and

comparing the response of the lymphocytes with an average response of lymphocytes from a control group of individuals.

7. A cell cuture medium useful for determining levels of intracellular function of cysteine and performing biochemical analysis of antioxidant function in human lymphocytes, said medium comprising:

a buffered, serum-free solution containing the following ingredients:

a carbohydrate selected from the group consisting of glucose and a compound biologically capable of producing glucose in said lymphocytes,

a biologically usable form of pantothenic acid, choline or a biological usable form of a substance capable of producing choline in said lymphocytes,

inorganic ions comprising chloride, phosphate, calcium, magnesium, potassium, sodium, and iron in a biologically utilizable form,

cumene hydroperoxide,

deionized water,

N-Acetyl-L-Cysteine, and

a mitogen in an amount effective to stimulate said lymphocytes being assayed;

said buffered, serum-free solution having a pH from about 6.8 to 7.6,

said cell culture medium characterized by being effective to determine nutritional deficiencies, inadequacies, and imbalances and to biochemically analyze antioxidant function of the lymphocytes.

8. The cell cuture medium of claim 7, wherein said medium is supplemented with a nutrient supplement selected from the group consisting of biological utilizable forms of amino acids and vitamins, the nutrient being tested for being omitted from or being present in limiting or inhibitory amounts in the nutrient supplement.

9. The cell cuture medium of claim 7, wherein said vitamins are selected from the group consisting of biotin, folinic acid or a biologically usable form of folic acid, nicotinamide or nicotinic acid, riboflavin, thiamin, vitamin B_6, and vitamin B_{12}, and compounds capable of producing them in the cells; and wherein said amino acids or the compounds biologically capable of producing the amino acids comprise L-arginine, L-cysteine, L-glutamine, glycine, L-histidine, L-isoleucine, L-leucine, L-lysine, L-methionine, L-phenylalanine, L-serine, L-threonine, L-tryptophan, L-tyrosine, and L-valine, the amino acids being present as a group, each in an amount not exceeding inhibitory concentrations.

10. The cell cuture medium of claim 7, wherein said cumene hydroperoxide is present in a concentration of from about 50 µM to about 500 µM.

11. The cell culture medium of claim 7, wherein the cell culture medium is supplemented at concentrations eliciting approximately a maximal response with one or more stimulatory nutrients selected from the goup consisting of pyruvate, adenine, and inositol or compounds capable of producing them within said lymphocytes.

12. A method of determining levels of intracellular function of cysteine and analyzing biochemically cellular antioxidant function in an individual comprising the steps of:

inoculating the cell culture medium of claim 7 with lymphocytes from said individual;

incubating the inoculated cell culture medium; and

comparing the response of the lymphocytes with an average response of lymphocytes from a control group of individuals.